

MBF 3CI 3.3 Warm-up

Date: \_\_\_\_\_

Warm-up: Bias**You do NOT need to copy these down.**

You have learned about all different types of bias:

1. Sampling bias
2. Non-response bias
3. Response bias
4. Measurement bias

Given the following situations,

- a) Classify the bias or biases present
  - b) Suggest how it can be avoided
- 
- A. A survey asked students at a HHSS football game whether a fund for extra-curricular activities should be used to buy equipment for the football team and/or instruments for the school band
  - B. A poll by an online newspaper includes the question: "Do you plan to support the current government at the next federal election in order to continue to implement their excellent and amazing policies?"
  - C. A science class asks every fifth student entering the cafeteria to answer a survey on environmental issues. Less than half agree to complete the questionnaire.

Sampling Bias

Non-response Bias  
Measurement Bias

Non-response Bias

Before we begin, are there any questions from last day's work?

**Today's entertainment: pp. 114-117 #1 to 5, 7 to 14**

**Note: \*\* Answers to 3 a,d are incorrect**

**\*\*they should be MEASUREMENT BIAS!!**

## Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) Understand the difference between discrete data and continuous data
- b) Understand the difference between a bar graph and a histogram.
- c) Understand different ways to express an interval.

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**3.3: Display Data**Date: Mar-20/17

One web site you need to check out ⇒ <http://www.worldometers.info>

Data can be divided into two major categories: discrete and continuous.

**Discrete data** can take on only a countable number of values.

**Continuous data** has an infinite number of values.

*Examples of discrete data*



# students with blue eyes

# students wearing black

*Examples of continuous data*



mass of a textbook

heights of students

**Discrete data** can be either numerical or categorical.  
**Categorical data** are named types instead of numbers.

Examples of categorical data

types of chocolate bars  
 ↓  
 types of stores- shoes  
 clothing



**Continuous data** can *never* be categorical – it must be numerical.

**On your own, do pp.125-126 #1 and 4.**

(The final answers are in the back of the text on p.555)

**pause here?**

The number of observed data in a given interval or a category is known as the **frequency**.

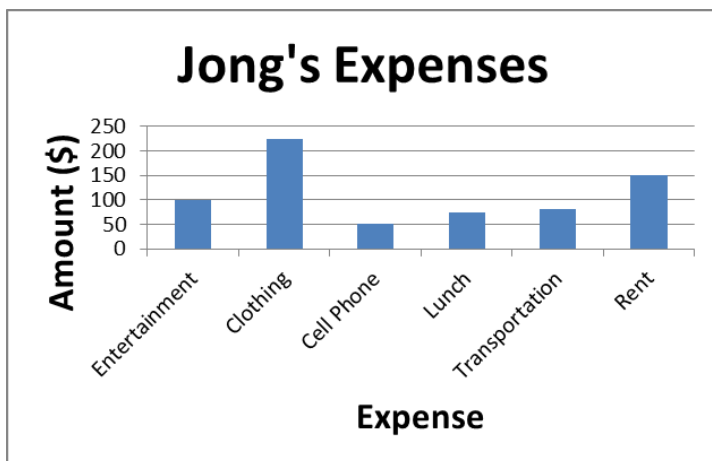
For example: Using height

Handwritten intervals in red ink:  $5'4''$  |  $5'4''-5'6''$  |  $5'6''-5'8''$  |  $5'8''-5'10''$  |  $5'10''-6'6''$  |  $6'$

A **frequency bar graph** is a diagram that represents quantities with horizontal or vertical bars, whose lengths correspond to the frequency of the particular category.

Bar graphs display discrete data only!

So, there is always a gap between each bar.



Calculate the Rent as a percentage of Expenses

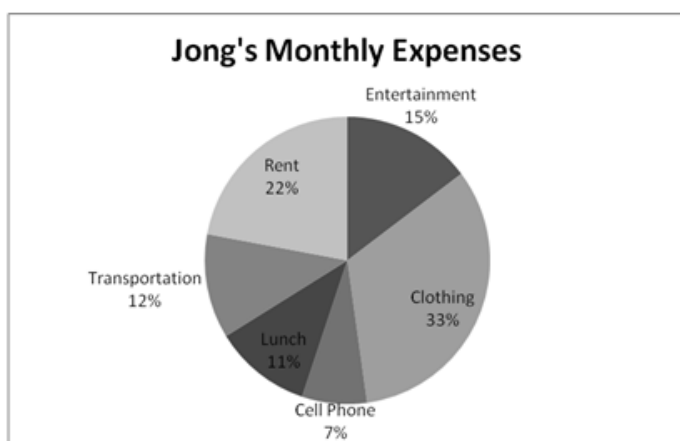
$$= \frac{150}{675}$$

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$$\approx 22\%$$

A **pie (circle) graph** is a diagram where the circle represents the whole and each sector of the circle proportionately (%) represents a part of the whole. Pie (circle) graphs are for discrete data only!

**You may use a circle graph or bar graph any time you want to illustrate comparisons, as long as the data is discrete.**



Each "slice" is called a **sector**.

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An **interval** is all of the numbers between two given numbers.

Examples of an interval



$0-10, 10-20, 20-30$

$5'6''-5'8'', 5'8''-5'10'', 5'10''-6'0''$

$(0, 10)$ ,

not including

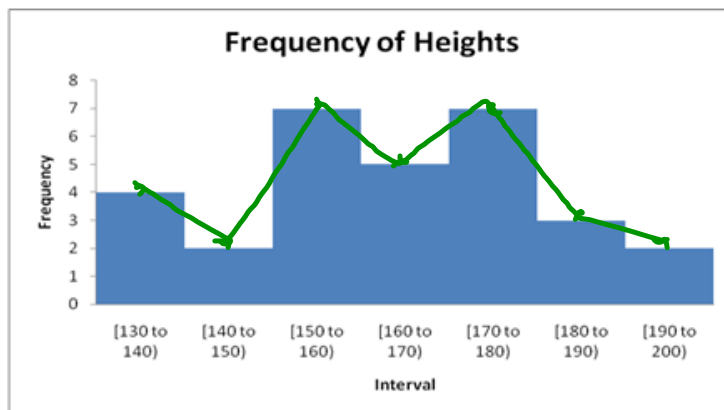
$[0, 10]$

including 10


$[0, 10), [10, 20), [20, 30), [30, 40]$

$0 \leq x < 10, 10 \leq x < 20$

A **histogram** displays quantities with vertical bars whose lengths correspond to the frequency of a particular interval. It is different from a bar graph in the sense that the intervals contain only continuous data! As a result, there is **never a gap** between the vertical bars.



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Since there are no gaps from one interval to the next, it makes sense that a **line graph** can also be displayed for continuous data too!  
*(Let's superimpose this on the graph above)*  tap the graph

On your own, do pp.125-126 #2 and 3.

(The final answers are in the back of the text on p.555).

Note: in #2, some of the answers in the back say "circle graph" is the best choice.

Any time the data is discrete and you want to illustrate comparisons, a bar graph OR circle graph is okay!

Are you done #1 and 4 yet too?

**Be ready for a small Quiz tomorrow on Sampling Techniques.**